

Section 6-3: Write and Graph Equations

By the end of this lesson, you should be able to answer:

- How do you write equations of lines using slope, intercepts, and points?
- How do you graph a line given the equation?

Where you might see this in the real world:

- Finance, sports, transportation, recreation

Define the following terms:

1. Linear equation
2. y -intercept
3. Slope-intercept form
4. Point-slope form

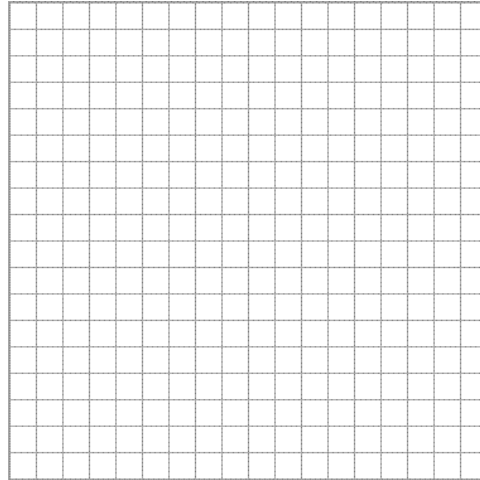
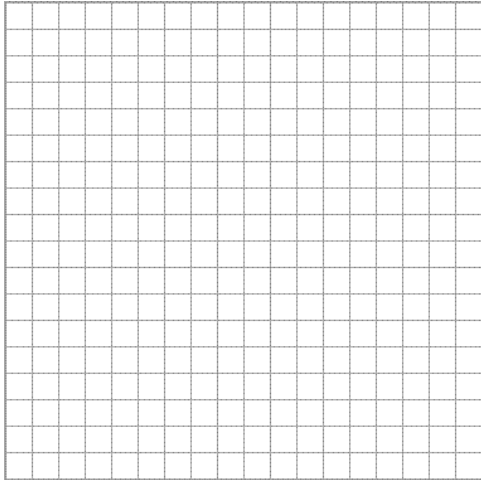
In Section 6-2, we learned how to graph an equation if we only had a point and a slope. First we plotted the point then we used the slope to find the rest of the points, which were then connected with a straight line. We can also use this information to find the equation of the line.

In the slope-intercept form, we have two things given to us: the _____ and the _____. These are the only two things we need to put an equation in the slope-intercept form, and this is also where it got its name from. In the slope-intercept form, m stands for _____ and b gives the y -coordinate of the _____.

Example 1: Identify the slope and y-intercept for each line and graph the lines on the same set of axes.

a. $y = \frac{1}{2}x$

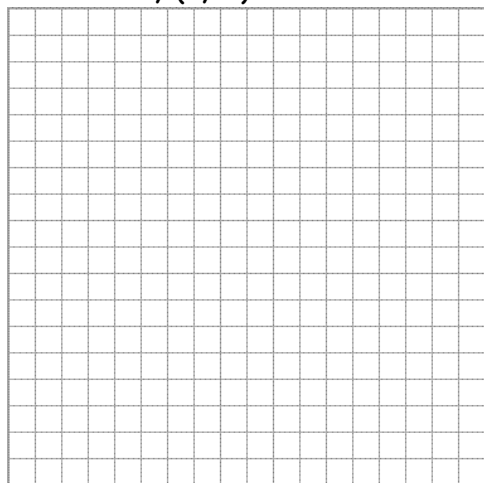
b. $2y - x = -6$



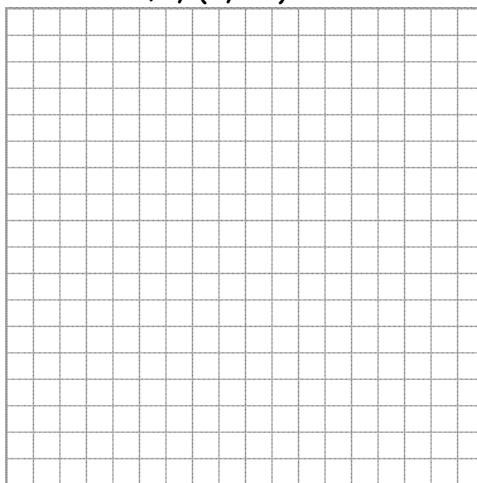
To use the slope-intercept form, you need to have the slope and the y-intercept. If you have any point other than the y-intercept, then you ***cannot*** just plug in for b . You will need to either use the slope-intercept form to find b (which takes quite a bit of time), or you could use the **point-slope form**. It is called point-slope because the two things you need to use this are a _____ and the _____.

Example 2: Write the equation of the line from the given information, choosing which form you would need before you begin. Then graph the line.

a. $m = -2$, $(0, 4)$

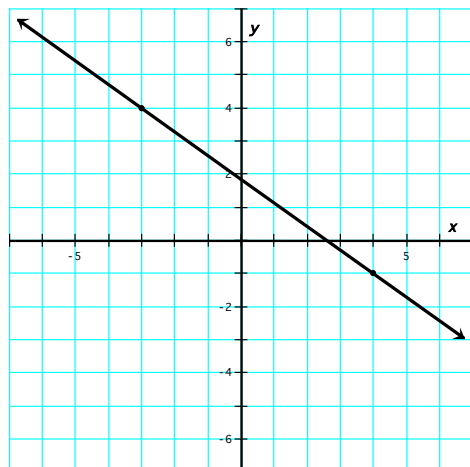


b. $m = 3/4$, $(8, -2)$

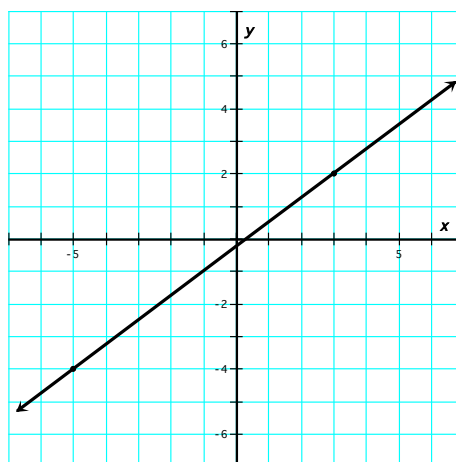


Example 3: Write the equation for each line.

a.



b.



Problem Set:

"We can have facts without thinking but we cannot have thinking without facts." – John Dewey